



Optical properties of ZnO nanocrystals embedded in PMMA

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Résumé en anglais	<p>We report in this work the preparation of thin films of ZnO nanocrystals synthesized and dispersed in polymethylmethacrylate using a easy route and deposited in glass substrate by spin coating technique. Their structural and optical properties were investigated by X-ray, absorption and photoluminescence spectroscopy. The XRD patterns exhibit sharp peaks at 2θ corresponding to the hexagonal (wurtzite) phase diffraction planes. The optical characterization, exhibit a wide absorption band in the range of the study and a large emission band with three peaks at 481.5, 531.09 and at 671.28 nm. The crystallites radius (R) was estimated by applying the effective mass approximation model and was about 1.8 nm. From measurements of second order susceptibilities using harmonic generation technique at $\lambda=1,064$ nm in picoseconds regime we deduced λ_{eff}^2 equal to 5.95×10^{-10} m/V. Obtained λ_{eff}^2 was four order of magnitude larger compared with ZnO bulk material (2.5 pm/V).</p>
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